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JPRS L/10154

2 December 1981

USSR Report

ECONOMIC AFFAIRS

(FOUO 17/81)

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

MANAGEMENT OF INDUSTRIAL ORGANIZATIONS SCRUTINIZED

Moscow VOPROSY EKONOMIKI in Russian No 7, Jul 81 pp 42-52

/Article by A. Nagovitsin: "The Functions of the Management of All-Union Industrial Associations"/

/Text/ In the Main Directions of USSR Economic and Social Development for 1981-1985 and the Period to 1990 the task is set "to systematically improve the organizational structures and to increase the efficiency of operation of production and industrial associations on the basis of further concentration, specialization and cooperation..., to make more precise the general diagrams of the management of sectors, which have been drawn up in industry, as applied to the tasks of the 11th Five-Year Plan." At present general diagrams of the management of the sector have already been drawn up and adopted for 35 industrial ministries, about 500 all-union industrial associations (VPO's) have been formed.

It is well known that industrial associations were formed in place of the former main production administrations of the sectorial ministries, which were organs of administrative management, being at the same time a part of the system of the ministry, a structural unit of it. The main administrations did not bear material liability for the work of the subsector, since they were budget-carried organizations, received financial assets centrally for the development of production, material incentives and so on.

Unlike the main administration, the VPO is a cost accounting organization, which has been separated from the management system of the ministry and unites a large number of enterprises, production associations, scientific research, planning and design and technological organizations. The advantage of VPO's as compared with main administrations consists in the fact that they have their own centralized and special-purpose economic stimulation funds. This enables them to solve much more efficiently the problems connected with the drafting and implementation of comprehensive plans. The managerial staff of the VPO, which heads the industrial association, has an independent balance sheet and operates on the principles of cost accounting. Within the VPO there are primary units (independent enterprises, production associations and organizations) which are relatively detached from each other. The legal and organizational basis of the relative detachment of these units is connected with the combination of the formal attributes of cost accounting (the right of a legal entity, one's own balance sheet, an established system of planning and accounting, a current account at Gosbank) with the real attributes (the comparison of the expenditures and the results of activity, the self-sufficiency and

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profitability of production, material interest and liability, day-to-day managerial independence). Here, whereas enterprises act as a subject of the law, the VPO is not such a subject. The director of the VPO represents the interests of the association, since the management of the VPO and the enterprises and organizations belonging to the complex can be a subject of the law and a legal entity. All this creates great difficulties in the high quality and quick performance of the functions of management, which have been assigned to the VPO as a unified production management complex.

A general methodological approach to the category "the function of management," first, as a state, legal function and, second, as an objectively necessary type of administrative labor, which became separated in the process of its specialization and exercises directed influences on the objects being managed for the achievement of the set goal, is observed in a number of works on management.[1]

The functions of management are broken down into general and specific functions. Among the general functions are: the organization of work, planning, regulation, coordination, stimulation and supervision, which are connected with the fulfillment of general tasks and the tasks typical of the entire management process.[2] An important place among the indicated functions of management is assigned to the function of supervision, which unites all the functions of management in a unified whole.[3] Among the specific functions are general line supervision, the planning of production, including its technical preparation, product quality control, financial activity, the selection and placement of personnel and so on.[4] Thus, by the category "the function of management of industrial associations" there should be understood the types of activity, which are performed by the management of the VPO with the distinction of both the functions which are common to any management (regardless of the sectorial peculiarities) and the specific functions which are connected with the peculiarities of the work of the management staff. Here the functions of management of the VPO are a component of the activity of the complex as a whole. The scope of the functions of management depends on the sectorial affiliation of the VPO, the territorial distribution of all the enterprises and organizations belonging to it, the list of output being produced, the cost accounting system, the level of the mechanization and automation of management work proper, the amount of incoming information and so on.

The assignment of rights (duties) is reviewed by the executives of the ministry for the purpose of exempting the middle level (the VPO's) from the performance of functions not characteristic of them and of relieving the staff of the ministry of the solution of routine questions. However, in practice the duplication of functions often occurs. The absolute duplication of the management functions of the VPO and the sectorial ministry is observed with respect to: the elaboration and approval of technical and economic standards, their submittal of drafts of state standards for approval, the drawing up of the title lists of construction projects, standard structures and staffs of enterprises, the monitoring of the proper use of prices and rates by enterprises and organizations and so on. Thus, the same responsibility for the drafting of long-range and current plans of the training and improvement of the skills of the regular labor force, the analysis of the state of technical norm setting and so on have been assigned to the administration of the organization of labor and wages of the sectorial ministry and accordingly to the department of the VPO.

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The duplication of the management functions of the VPO by the ministry causes a contradiction between the central regulation and the cost accounting of the complex and limits the independence of the main units of the VPO. In the general diagrams of management not all of the measures on the specialization and concentration of production are taken into account, the questions of the economic mechanism are touched upon in part. In some instances haste was observed in the formation of associations, which was not preceded by the planned elaboration of the technical and economic plans of the complexes, the appropriate substantiated designing and planning documents were absent. As a result of this there were not fully taken into account: the technological similarity of the processes of production and the territorial distribution of the enterprises and organizations being united, the similarity of the products being produced by them, the existence of stable cooperative ties, the combination of the performance of the complete processing of raw materials, the complete or partial centralization of the performance of the production economics functions of management. The VPO coordinates a number of questions of a production nature with the ministry due to the lack at the association of the rights of day-to-day managerial independence. Instances of the direct ties of the staff of the management of the ministry with production associations and plants, bypassing the management of the VPO, do occur. For example, often without the consent of the VPO the ministry withdraws capital investments from the plants of a subsector, while an order on the sending of workers to other plants of the sector is given to production associations and enterprises. The workers of the ministry often make direct contacts with the managers of enterprises on questions of material and technical supply. These and other shortcomings make difficult the efficient implementation of progressive measures in the subsector, check the process of the division of labor and are at variance with standard documents. In a decree of the CPSU Central Committee and the USSR Council of Ministers (1973) it was noted that "in connection with the improvement of the organization of the management of industry on the basis of the creation and development of production associations (combines), all-union and republic industrial associations each ministry (department) should concentrate efforts on the solution of the fundamental questions of the long-range development of the sector and the increase of production efficiency, on the improvement of the system of planning and the methods of management, the pursuit of a uniform technical policy, the assurance of the effectiveness of capital investments, the acceleration of scientific and technical progress, the increase of the quality of the products being produced, the better placement and utilization of specialists, the increase of labor productivity and the most complete satisfaction of the needs of the country for all types of products of the sector."

All this attests that the activity of the staff of the ministry, on the one hand, has not been brought in line with the work of the management staff of the VPO. On the other hand, the work experience of the VPO's and production associations shows the existence of a number of rights and duties of the middle and primary levels of management, which act in parallel.

At present there are only four groups of functions of management, which have been assigned to the production association, but not to the VPO. Among them are: the efficient use of the equipment of rail, water, air and motor transport, the systematic improvement of the organization of loading and unloading and materials-handling operations, the shortening of the layovers of means of transportation for loading and unloading; the tightening up of labor discipline, the improvement of the forms and systems of wages, material and moral stimulation; the enhancement of the role of mathematical economics methods and the extensive use of computer and

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communications equipment in production management; the implementation of the necessary measures on the protection of the environment against contamination by industrial and household discharges.

The duplication of the management functions of the production association and the VPO has the result that the centralization of the functions of management even at the primary level is being accomplished on a considerably smaller scale than possible. For example, in the production associations of light industry the proportion of the functions performed centrally is only 30-40 percent with the economically feasible centralization of up to 70 percent, including 45 percent of the accounting and 70 percent of the quality control.[5]

One of the shortcomings, in our opinion, is the lack in the Procedural Instructions on the Drafting of State Plans of USSR Economic and Social Development of indicators which characterize the centralization of the functions of management. The coefficient of centralization of operations for the primary level is calculated as the ratio between the number of workers with respect to the function being analyzed on the managerial staff of the production association and the number of workers in the production units of the association.[6] The drawback of such a method consists in the fact that the number of employed workers inaccurately reflects the amount of work performed, the actual degree of their workload, which is far from identical, is not taken into account. The lack of data on the labor intensity of management operations makes it impossible to determine the indicated indicator and the ratio of the labor intensity of operations with respect to each function performed centrally to the overall labor intensity of the operations. It seems to us that it is possible to assign the operations on management between the staff of the VPO and the other units of the association on the basis of the coefficient of the centralization of the functions of management, that is, as the quotient from the division of the number of operations with respect to the function, which is performed centrally by the managerial staff of the production association, by the total number of operations of this function, which is carried out by all the units of the association.

The analysis of the activity of the leading VPO's in the sectorial ministries of tractor and agricultural machine building, the electrical equipment industry, instrument making, automation equipment and control systems, chemical machine building and heavy and transport machine building shows that the main functions performed by them can be reduced to the following: to take part in the implementation of the investment policy, to be responsible for the uniform technical policy of the subsector and for the development of new models, to organize the sharing of experience in the area of advanced technology, to bear responsibility for economic and financial activity, to generalize national and world experience and so on.

The development of industrial associations is being carried out by the centralization of the functions of management in the staff of the VPO with the preservation of the legal independence of the production units and organizations belonging to the association. Here the combining of the managerial staff of the association with the managerial staff of the chief enterprises does not occur in the VPO, as is observed in production associations. Moreover, the performance of individual functions takes place entirely or partially centrally: by the enterprises of the VPO; by new organizations; by an enterprise which is not a part of this association on a contractual basis; by an organization which was established on a matching basis with other

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VPO's; by the sectorial ministry in the form of a specialized organization which serves a number of industrial associations (for example, for repair) or all associations (for supply and marketing). The decrease of production costs and overhead expenses, the reduction of the cost of the managerial and service units, the use of computers and the availability of the appropriate personnel, who are capable of the skilled performance of the management functions assigned to them, play an important role in the choice of one means of development or another. It is possible to accomplish the performance of functions in the following versions: by means of the managerial staff of the VPO (complete centralization); mainly by administrations of the associations (partial centralization); the concentration of a significant proportion of the operations at the primary level of management.

If the VPO concentrates all the production capacities of the sector for the output of certain types of products and this specialization is of a long-term nature, the industrial association is called upon to concentrate the sectorial functions on the development of this production (for example, the forecast of the national economic demands for these products, the planning of the production of its sector, scientific, technical, planning and design support, the appraisal of the design, the drafting of plans of long-range development, the inspection of product quality). Here the sectorwide organs of management should be organized in an industrial complex and be separated from the central staff of the ministry. The centralization of those functions, which are not connected with direct operational management: production, technical and economic planning, the technical development of production, capital construction, the development of automated control systems, the organization of labor and wages, the training of personnel, accounting, legal service, settlements with the state budget and the bank, is necessary in the staff of the VPO. Thus, the general diagram of the USSR Ministry of Machine Building for Light and the Food Industry and Household Appliances provides for the concentration of all the operations connected with the improvement of the technology of the preproduction of new products. These functions have been assigned to the Orgtekhavtomatizatsiya VPO,[7] in which the operations on the designing and introduction of progressive technology, advanced forms of the mechanization and automation of production processes and management functions, as well as on the production of accessories, equipment for standard workplaces and intrashop transport are concentrated.

It seems to us that the settlements with the state budget and the bank should be made by the VPO on the condition that the distribution of the profit obtained by the entire complex is based on the standards of extended use. Thus, the Ministry of Instrument Making, Automation Equipment and Control Systems is the only sectorial ministry in the USSR in which there is a five-year financial plan. However, the standards of extended use, particularly of the profit withholding taxes, "became stuck" at the level of the middle unit of the management of industry. At present there is still no reliable analogue of their extension to production associations or large enterprises. In our opinion, in the future the standards of extended use of industrial associations should be extended to the primary unit--the production association and enterprise. In the future, when the long-range production and financial plans of the middle and primary level of the management of industry should be drafted with the assistance of computers, the establishment of the relations of the association with the state budget on a long-term basis will become possible. In the decisions of the CPSU Central Committee and the USSR Council of Ministers on the improvement of the economic mechanism it is stipulated that, beginning with the 11th Five-Year Plan, "the ministries and departments along with the draft of

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the five-year plan and in conformity with it are to draft five-year (with a breakdown by years), as well as annual financial plans.... The corresponding financial plans are also to be compiled for production associations (enterprises)." In this connection the drafting of the long-range financial plan by the Institute of Electronic Control Machines of the mathematical economics modeling of the activity of the industrial complex in the system of the Ministry of Instrument Making, Automation Equipment and Control Systems is of interest. Thus, for the Soyuzpromavtomatika and Soyuzelektronschetmash associations multivariant forecasting and planning calculations of their development up to 1990 have been made.[8]

For the purposes of promoting the economic liability of VPO's for the results of financial and economic activity and increasing their interests in the most efficient use of material and financial resources the decree also stipulates that during the current five-year plan the industrial ministries are to establish on the basis of the assignments approved in the five-year plan a stable standard of deductions from the profit with a breakdown by years, which is placed at their disposal. The indicated portion of the profit will be allocated for the financing of investments, the repayment of bank credits, the payment of interest, the formation of the unified fund for the development of science and technology and other economic stimulation funds.

The basis of the organization of economic relations in the industrial association when performing any function is: the existence of sources of expenditures on the centralized performance of functions; the formation of the appropriate reserves, the conclusion of long-term contracts between all the main units within the VPO and with outside organizations; an effective system of claims and sanctions; the use of prices for the additional stimulation of production (markups and discounts); the payment of bonuses to workers subject to the functions performed in the association.

If the individual functions are performed centrally by operating or specially created enterprises, the Statute on the Socialist State Production Enterprise serves as the basis of the organization of cost accounting relations (internal and external). The expenditures on the centralized performance of functions are covered by the following sources: special assets (of a special-purpose order); the funds and reserves for the performance of individual functions, which are accumulated either on the balance sheet of the managerial staff of the industrial association or on the balance sheet of a separate organization; the assets of the production development fund of the VPO; the saving of resources as a result of the decrease of the volume of the corresponding types of operations at enterprises and organizations.

The implementation of functions by the managerial staff of the industrial association can lead to an increase of size and the expenditures on its pay even in the event of the reduction of the departments at the primary level as a result of the emergence of a number of new functions of the VPO (for example, patent and licensing work, the study of the demand--current and long-range--for items produced by the industrial complex, quality control, the training of managerial personnel, the activity connected with the improvement of the management and organizational development of the association). It is possible to achieve a decrease of management costs for the sector (subsector) as a whole in the process of changing over to a shopless structure. Here the production sections, which are managed by senior foremen, are subordinated directly to the director, while the entire functional staff is concentrated in the plant management. Thus, the changeover of one-fifth

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of the enterprises of the pulp and paper industry to a shopless structure made it possible to decrease the expenditures on the pay of the managerial staff by nearly 30 million rubles and to release more than 10,000 people. In all 329 shops and 178 production sections were eliminated in the pulp and paper industry.[9] Shopless management is being implemented in nonferrous metallurgy and the timber and wood processing industry. The experience of the organization of management at the number of associations of the automotive industry is a modification of the shopless structure of production. For example, at AvtoVAZ, to which the rights of a VPO have actually been granted, the management of the shops is carried out by line personnel. There are a deputy shop chief for the shift, a foreman and a shift chief in each shift. All the functional personnel, who are engaged in the economic and operational service of production, repair, material supply, as well as the monitoring of the progress and preparation of production, have been removed from the shop service and centralized for the association and the works as a whole.

The further differentiation of the functions of management takes place in the process of the social division of labor. This leads to the development of various services, which are formed in the industrial complex. Thus, the centralization of the repair system can entail the detachment of its service from the enterprises of basic production. Specialized equipment repair enterprises will be set up within the VPO. The centralization of the functions of the management of major repair in the form of the formation of a division of the preparation of production will take place in the managerial staff of the association. It is expedient to leave routine repair services at the enterprises (production associations). The possibility of creating special permanent brigades for the performance of major repair is also not ruled out.

It is possible to carry out the centralization of ancillary and maintenance works in the extractive sectors, where basic production maintains a finished items circularity. The centralization of basic and ancillary production is possible in the extractive sectors, since the enterprises are technologically interconnected. This reflects the unity of the industrial associations as complex systems and the existence of internal ties not only in basic production, but also in ancillary production and maintenance.

When including in a VPO enterprises which are territorially detached, the centralization of the functions of management should be be carried out by groups of enterprises. This principle has received the name of the cluster principle, since different forms of specialization (item, part, unit) have been adopted at the enterprises which have been included in a specific management cluster.

The centralization of the functions of day-to-day management, especially at the enterprises of the VPO, which specialize in the production of component products, finished items and assemblies, is necessary for the purposes of increasing the responsibility of the association for current production activity. This will make it possible to strengthen the coordination of the work of the enterprises of the association. In this case the functions of planning, scientific and technical progress, pricing, product quality control, material and technical supply and marketing must also be centralized.

At those VPO's, the enterprises of which are territorially detached, the possibilities of the centralization of the functions of management are considerably limited along the line of basic and ancillary production. In this case the enterprises

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cannot perform the most important functions with sufficient efficiency. For example, the study of the needs of the national economy for the necessary products of the VPO requires the creation of a large scientific center, the centralization of calculating and computing operations and so on.

At present centralization at the primary level--in production associations (PO's)--accompanies the centralization of functions in the VPO. Thus, at the Apatit Production Association, which is a part of the Soyuzgorkhimprom Industrial Production Association of the USSR Ministry of the Chemical Industry and has four mines, two concentration factories, a large motor transport and rail management, technical training, accounting, warehousing services, general-purpose loading and unloading operations and the supply of enterprises and cities with electric power and water have been completely centralized. The new procedure of performing management functions is promoting the pursuit of a uniform policy with respect to the production and socio-economic tasks. However, the complete centralization of such services as the personnel division, the production control staff and the technical divisions is leading to undesirable results. Here the influence of the managers of the subdivisions on the education of the workers, day-to-day production management and the improvement of technological processes is decreasing. Therefore every mine and every concentration factory has at its disposal a production control staff, a personnel division, small labor and wage groups, planning and technical divisions. In this case the managers of the subdivisions manage production more flexibly. The establishment of the Krasnyy Bogatyr' Production Association made it possible to centralize all the functions of management, the planning of production and labor, accounting, material and technical supply and the marketing of products. As a result of the decrease of management personnel the expenditures on their pay were reduced by 27,000 rubles. At the Moskovskiy Elektrolampovyy Zavod Association, which consists of nine enterprises and two design bureaus, it was possible to centralize the scientific research and experimental design work and to coordinate it with the preparation of production. At the same time the "development-introduction" cycle of innovations was shortened by more than one-half. As a whole the centralization of the functions of management made it possible to release at the association 612 workers of the managerial staff.[10]

The degree of manageability of the VPO directly depends on the content of the functions performed by the workers of the staff. This should also be the basis for the determination of the criterion of the structure of the managerial staff. The amount of work on each function corresponds to the specific divisions of the structure of the managerial staff into divisions and services.[11]

The General Statute on USSR Ministries (1967), in which the formation of new structures, including VPO's, was not taken into account, was one of the causes of the above-indicated duplication of the functions of management by the ministry and the industrial association. The entire system of duties and rights of the ministry was based on the orientation of the management of enterprises, and not production associations and VPO's. In our opinion, it is necessary to define specifically the functions of sectorial ministries. This will make it possible to allocate rights more correctly not only among the line managers of production structures, but also among the staff members of the functional subdivisions.

The methodological principles of the integrated system of production management, which were used during the 10th Five-Year Plan in the Ministry of Instrument Making, Automation Equipment and Control Systems, the Ministry of the Electrical Equipment

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Industry, the Ministry of Heavy and Transport Machine Building, the Ministry of Chemical and Petroleum Machine Building and the Ministry of Tractor and Agricultural Machine Building, should be adopted more extensively in practice for the purposes of optimizing decision making and the expenditures on management. The specialization of the structural subdivisions of the indicated ministries, including VPO's, is being carried out with the combination of the linear-functional structure of management with the goal program structure. This makes it possible to take into account in the process of management the assimilation of new production and the introduction of modern equipment and so on.

The distribution of the functions of management between the ministry, the VPO and the primary units is clearly specified with respect to the overall functions of management. In the Ministry of Tractor and Agricultural Machine Building, for example, long-range questions and complex problems of the operation of the sectorial mechanism of management are solved on the level of the ministry; questions of the development of the subsector as a unified production management complex are solved on the level of the VPO; the drafting of five-year plans of retooling and the assurance of their fulfillment are accomplished on the level of production associations and enterprises. At the different levels of subsectorial management--the VPO, the production association, the enterprise--the positions of deputy managers for economic questions have been introduced, which has promoted the stepping up of the work on the coordination of the activity of the economic services of all levels of management.[12]

Interesting experience has been gained in the middle level of management of the Ministry of Chemical and Petroleum Machine Building, which is based on the fact that the number of engineering and technical personnel and employees is calculated for each management function separately, on the basis of the most important factors which influence the amount of work. The degree of economy of the managerial staff and the reduction of the expenditures on its pay are determined by means of an indicator--the proportion of managerial workers in the total number of industrial personnel engaged directly in production.

The changeover of the Ministry of Chemical and Petroleum Machine Building to the standard method of planning was connected with the fact that the procedure of determining the number of engineering and technical personnel and employees, which was previously in effect, did not take into account the increasing demands on the increase of product quality, the technical improvement of production, the achieved level and planned increase of labor productivity per worker of the industrial personnel engaged directly in production. The improvement of management on the basis of the adoption of standard structures of the staff and standards of the number of personnel make it possible to identify the unnecessary units of management.

The standard method of determining the number of personnel was used during the 10th Five-Year Plan for another five ministries: at the associations of the USSR Ministry of Light Industry, the USSR Ministry of Ferrous Metallurgy, the USSR Ministry of the Coal Industry, the USSR Ministry of Nonferrous Metallurgy and the USSR Ministry of the Electrical Equipment Industry. In conformity with the decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 the work in this direction will also be continued during the 11th Five-Year Plan in other sectors of industry.

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The difficulties connected with the selection of personnel, including management workers, do not make it possible at times to perform at the proper level the functions assigned to the managerial staff of the VPO, which is created on the average in 1.5-2 years. At times industrial associations operate without a chief. The manning table is approved, as a rule, before the functions of the future composition of the managerial staff are determined, that is, the size of the staff is planned separately from the fulfillment of the tasks of this organization. The implementation of an entire series of measures connected with the training of the managerial personnel of the VPO is required for the successful activity of industrial associations. Moreover, the question of the seat of the managerial staff of the VPO has been inadequately thought out. For example, nearly all the VPO's of the Ministry of Tractor and Agricultural Machine Building (the managerial staffs) are in Moscow, where, as is known, there is not one tractor plant. In this case the managerial staff of the industrial association cannot be brought close to production. A similar situation is also observed in the Ministry of Nonferrous Metallurgy, in which of the nine VPO's eight are in Moscow, in which there is neither a mine nor a pit of nonferrous metallurgy.

The analysis of the gained experience of VPO's on the improvement of the organization of management attests to the inefficient use of the available reserves. The necessary criteria, which determine the cooperation of the functional services with the production subdivisions of the VPO, have not been elaborated. For example, several services simultaneously take part in the formation of the integrated management system of the VPO. The division of labor and wages or the division of the scientific organization of labor and management and so on, as a rule, deals with the organizational structure of the association. Mainly the design and scientific research organizations of the VPO take part in the development of the automated control system. The functional services of the association, as well as the managers of the different subdivisions of the VPO take almost no part in the solution of problems and the adoption of the automated control system.

In our opinion, the following requirements are necessary for the determination of the functions of management of the VPO: first, the assurance in the ministries of the functions of the strategic supervision of the development of the entire sector; second, the formation of the VPO--the center of the unified production management complex and the delegation to the industrial association of a portion of the functions attached to the enterprise and the production association; third, the concentration of the management of routine processes in the production associations of the VPO and the strengthening of day-to-day supervision on this basis. The principle of the delegation to the VPO of a portion of the rights by both the ministry and the enterprise should be the basis for the determination of the functions of management of the VPO. Otherwise the point of the existence of the VPO as the middle level of management is lost.

The questions connected with the further improvement of the cost accounting of the VPO for the purpose of ensuring the performance of the functions assigned to it,[13] as well as the changeover starting in the 11th Five-Year Plan of industrial ministries to cost accounting methods of management are acquiring great importance. In particular, the ministries have to complete the rearrangement of the organizational structure of the management of the sector in conformity with the approved general diagrams, to draft the five-year plan for 1981-1985, including the five-year financial plan as a component of it, to implement measures on the increase of the effectiveness of capital investments, to strengthen the dependence of the wage of

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each worker and the labor collectives on the increase of labor productivity and to increase product quality for the purpose of achieving the best end results.

The establishment in the five-year plans of the economic and social development of VPO's starting with the 11th Five-Year Plan of new qualitative indicators and economic standards (with a breakdown by years) on production, labor and social development, finances, capital construction, the introduction of new equipment and material and technical supply will strengthen considerably the economic potential of industrial associations, will make it possible to carry out more efficiently the reporting of the plan assignments to the primary units of management and will enhance the role of industrial associations in the sectorial system of management.

The extension of the functions of industrial associations will inevitably lead to the narrowing of the day-to-day managerial independence of ministries and enterprises. With the appearance of new functions "the factor of material interest does not offset the complications which actually arise during the changeover to the new structure of sectorial management" and which are connected with the fact that new functions "must be developed, it is necessary to acquire additional knowledge, to study."[14] The surmounting of this "barrier" is an important task of the improvement of the activity of all-union industrial associations.

The centralization of the functions of management is not an end in itself. It is necessary to carry it out where the flexibility and efficiency of management increase. It is important for the centralization of the functions of management not to come into conflict with the essence, which consists in the high quality and rapid fulfillment of the assigned duties.

The further improvement of all the aspects of the activity of the VPO should have as a goal the transformation of the middle level of management of industry into such a a production management complex, which would be capable not only of assuming responsibility for the increase of the efficiency and the quality of the work of the middle level of management of industry, but also of meeting in due time the needs of the Soviet people.

FOOTNOTES

1. See "Upravleniye sotsialisticheskim proizvodstvom. Voprosy teorii i praktiki" /The Management of Socialist Production. Questions of Theory and Practice/, 3d edition, Izdatel'stvo "Ekonomika", 1978, p 88; V. A. Yeliseyev, "Upravleniye vsesoyuznym promyshlennym ob"yedineniyem" /The Management of the All-Union Industrial Association/, Izdatel'skoye ob"yedineniye "Vishcha shkola", 1976, p 7; S. Kamenitser, V. Solomatin, "On the Development of the Management System at the Enterprise and Association" (in the book "Osnovy organizatsii upravleniya promyshlennym ob"yedineniyem i predpriyatiyem" /The Principles of the Organization of the Industrial Association and Enterprise/, issue IV, Izdatel'stvo "Ekonomika", 1973, p 10).

2. See B. V. Smirnov, "Funktsii upravleniya sotsialisticheskim proizvodstvom" /The Functions of the Management of Socialist Production/, Izdatel'stvo "Ekonomika", 1977, p 30.

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3. "Spravochnoye posobiye direktoru proizvodstvennogo ob"yedineniya, predpriyatiya" /A Reference Manual for the Director of the Production Association, Enterprise/, Vol 1, Izdatel'stvo "Ekomonika", 1977, p 21.

4. Academician A. Aganbegyan notes: "It is very difficult to give an exhaustive list of the functions of management. On the one hand, there are the general, 'all-round' functions, for example, the management of basic and ancillary production, finances, material and technical supply, manpower resources and so on. On the other hand, specific functions as applied to the individual subsystems of management can be distinguished. And even when examining only the general functions we are faced with a great diversity of specific types of management activity. They are forecasting, planning, programming, designing, the preparation and making of decisions, supervision, coordination, regulation, adjustment, reconciliation, good management, business correspondence, evaluation, analysis, monitoring, inspection, accounting, instruction and so on. Of course, all of these functions are connected and interwoven, some of them 'overlap' each other. Hence the possibility of distinguishing the key crucial functions of management: planning; organization; regulation, including accounting and monitoring" (A. G. Aganbegyan, "Upravleniye sotialisticheskimi predpriyatiyami" /The Management of Socialist Enterprises/, Izdatel'stvo "Ekonomika", 1979, p 10).

5. See "Osnovy organizatsii i metody upravleniya promyshlennymi ob"yedineniyami i predpriyatiyami" /The Principles of the Organization and the Methods of the Management of Industrial Associations and Enterprises/, "Nauchnyye trudy NIIPiNa pri Gosplane SSSR", Moscow, 1976, p 68.

6. See "Razrabotka normativov chislennosti sluzhashchikh i tipovykh struktur apparata upravleniya predpriyatiya i proizvodstvennykh ob"yedineniy" /The Elaboration of Standards of the Number of Employees and Standard Structures of the Managerial Staff of the Enterprise and Production Associations/, Moscow, NII truda, 1972, p 34.

7. See EKONOMICHESKAYA GAZETA, No 16, 1976, p 4.

8. See "Problemy finansov v khozraschetnykh ob"yedineniyakh" /Problems of Finance at Cost Accounting Associations/, Izdatel'stvo "Nauka", 1978, pp 158-184.

9. See EKONOMICHESKAYA GAZETA, No 19, 1976, p 6.

10. See P. M. Volodin, G. A. Menchinov, "Raykom i proizvodstvennyye ob"yedineniya" /The Raykom and Production Associations/, Izdatel'stvo "Moskovskiy rabochiy", 1980, pp 28, 60.

11. With respect to the primary levels of management the following versions of the quantitative composition of the staff members subordinate to a single manager were established by expert means: perform different functions--5-7 people; perform similar functions--8-20 people; perform identical functions--21-50 people (see "Spravochnoye posobiye direktoru proizvodstvennogo ob"yedineniya, predpriyatiya," Vol 1, Izdatel'stvo "Ekonomika", 1977, p 32).

12. V. Polyanskiy, chief of the Economic Planning Administration of the Ministry of Tractor and Agricultural Machine Building, notes: "The functions, rights and duties of all the structural subdivisions, managers and staff members are

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allocated vertically from the ministry to the worker at the workplace, while the interfunctional ties and interrelations of all the organizations involved in the solution of the posed problems are worked out horizontally" (see VOPROSY EKONOMIKI, No 8, 1977, p 47).

13. V. Naydenov notes: "That system of management, in which the maximum possible number of functions are linked up within the cost accounting of the subordinate units, is the most efficient" (VOPROSY EKONOMIKI, No 10, 1975, p 67).

14. See KOMMUNIST, No 8, 1975, p 56

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INDUSTRIAL DEVELOPMENT AND PERFORMANCE

INDUSTRIAL DEVELOPMENT DURING 10TH FIVE-YEAR PLAN

Moscow ISTORIYA SSSR in Russian No 5, 1981 pp 3-25

/Article by Ye. E. Beylina: "USSR Industrial Development During the Years of the 10th Five-Year Plan"/

/Text/ The 26th CPSU Congress, which was held in early 1981, outlined the main directions of the development of the USSR national economy for the 11th Five-Year Plan and the period to 1990. Their achievement should become a direct continuation of the policy, which was elaborated by the 24th and 25th party congresses and by now has been supported by the practical experience of the 1970's. Just as during the past two five-year plans the main task set for 1981-1985 is aimed at the increase of the standard of living of the Soviet people. It /"consists in the assurance of the further increase of the well-being of the Soviet people on the basis of the steady, progressive development of the national economy, the acceleration of scientific and technical progress and the changeover of the economy to the intensive path of development, the more efficient use of the production potential of the country, the utmost economy of all types of resources and the improvement of work quality"/[1] /in boldface/.

The policy of the intensification of production, which is integrally connected with the utilization of the achievements of the scientific and technical reovlution, retains decisive importance here. Consequently, the role of industrial production, which is the backbone of the Soviet economy, is increasing more and more. It is this sector of the economy that provides the national economy with tools of labor, with the modern technical equipment which is necessary for the reequipment of all spheres of production, the strengthening of the defensive potential of the country and the improvement of working and living conditions. On the eve of the 11th Five-Year Plan about 40 percent of all those employed in the sphere of physical production worked in USSR industry, more than half of all the national income of the country was created here.[2]

With allowance made for the arisen needs and the achieved gains the 26th CPSU Congress indicated the need to henceforth develop industry at a rate exceeding the growth rate of the other sectors of physical production (agriculture, transportation, capital construction and others).

What has been said completely determines the scientific importance and urgency of the study of the means of developing industry during the preceding 5 years and of the elucidation of the role which this sector played in the increase of the economic

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potential of the country and thereby in its transition to a higher level of development. It is quite clear that the time has not yet come for the full coverage of this complicated and multi-aspectual theme, which requires not only collective efforts, but also the substantial enlargement of the group of sources. But it already seems expedient today to begin its elaboration. For this we have the decisions of the latest party congresses, the decrees of the CPSU Central Committee, the speeches of the leaders of the party and the state, the verbatim reports of the sessions of the Supreme Soviet, the statistical yearbooks of the Central Statistical Administration and extensive materials which were published in the pages of journals and newspapers.

Within this article the main attention is devoted to the examination of such questions as the accomplishment of scientific and technical progress in industry, the development of the fuel and power complex, as well as the production of consumer items, that is, to the portrayal of the main directions, on which the policy of raising production efficiency and increasing the well-being of the people depended to the greatest extent.

The 10th Five-Year Plan was conceived of as a new step in the drive for the combination of the achievements of the scientific and technical revolution with the advantages of socialism. During the second half of the 1970's the accomplishment of this global task was given concrete expression in the current plans first of all in four directions: in the area of the production of tools of labor, in the improvement of technological processes, in the production of materials with preset properties and in the development of power engineering.[3]

The drive for scientific and technical progress was also conducted on an extensive scale during preceding five-year plans. The peculiarity of the 10th Five-Year Plan in this respect consisted in the fact that the State Committee for Science and Technology of the USSR Council of Ministers, while implementing one of the main directions outlined by the 25th CPSU Congress, proceeded to the development of comprehensive intersectorial programs which envisage the solution of the most important scientific and technical problems. In contrast to the previously used coordination plans, all of them, being a component of the socioeconomic development of the corresponding sectors, were fully backed by physical assets and were aimed at the obtaining of practical end results. In all during 1976-1980 200 comprehensive programs were elaborated, which presumed the fulfillment of about 6,000 different assignments, the majority of which were specific objects of new technical equipment.[4] Of course, this was only a portion of the scientific research being conducted in the USSR, the total amount of which was much more. But precisely the comprehensive programs, which were of an intersectorial nature, were of especially great importance for the economic development of the USSR during the years of the 10th Five-Year Plan (half of them were completed in 1976-1980).

First of all major measures on the development and improvement of machine building--the basis of the retooling of all the sectors of the national economy--were outlined in the comprehensive programs. The 25th CPSU Congress indicated the need to develop machine systems which completely encompass the entire technological process, the mechanization and automation of labor-consuming types of production, first of all in the sectors where a considerable number of workers are still engaged in difficult manual labor. Not only economic, but also social tasks were thereby set for the sector. Accordingly the turn to the production of sets of machines, the development of new technological lines and the increase of the unit capacities of the

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integrated sets were the main directions of the accomplishment of the new aims in the development of machine building.

Taking into account the ever increasing importance of this sector in the national economy of the country (machine building and metalworking had at that time more than 8,500 production associations and enterprises and produced approximately one-fourth of the industrial output of the country),[5] the CPSU Central Committee and the USSR Council of Ministers adopted in 1978 a decree on the further development of machine building during 1978-1980.[6] The 1980 decree, which was aimed at the considerable increase of the technical level and competitive ability of metalworking, casting and woodworking equipment and tools, was new evidence of the concern of the party and the government about the enhancement of the role of the sector in the development of the scientific and technical revolution.[7] A special place in it was assigned to machine tool building--the key sector of the machine building industry.

A conference of workers of the machine tool and tool building industry was held in Moscow in March 1980. More than 750 party workers, executives of ministries and production associations and leading scientists took part in the meeting of its sections. The discussion showed that significant changes in the structure of the equipment being produced had occurred during the 10th Five-Year Plan. Priority had been given to the most advanced types: the production of special, standard unit and unique machine tools and automatic lines was developed rapidly, the output of machine tools with numerical control doubled as compared with the Ninth Five-Year Plan. The proportion of goods of the highest quality category increased by more than four-fold. On the whole more than 3,500 models of new types of machines, equipment, devices and instruments were developed annually at machine building enterprises. During the years of the five-year plan the series production of 17,300 descriptions of new types of products was assimilated and started. Each year approximately 1,800 obsolete designs were removed from production.[8]

There were many models of highly productive technical equipment among the items assimilated by machine building. In the early 1970's the most prevalent power block had a capacity of 300,000 kW, at that time several units of 500,000 kW and 3 units of 800,000 kW were produced. During the 10th Five-Year Plan power blocks with a capacity of 500,000 and 800,000 kW were delivered to thermal electric power stations, while a unique model with a capacity of 1.2 million kW was developed for the Kostromskaya GRES.[9]

The dynamic development of civil aviation was another vivid indication of scientific and technical progress in industry. Nearly three-fourths of its passenger traffic were carried out during the years of the 10th Five-Year Plan by modern Il-62, Tu-154 and Tu-134 airplanes. The beginning of the operation of airplanes of a new generation: the 120-seat Yak-42 and the 350-seat Il-86 aerobus, which embodied many years of experience of Soviet aircraft construction and the latest technical decisions, became a noteworthy event in the history of domestic aircraft construction.[10]

Considerable technical progress was achieved in the electronics industry, which by means of the increase of labor productivity alone doubled the output of products. The changeover to the planning of scientific research and design development according to comprehensive goal programs, which were aimed at the development of new electronic instruments which meet the needs of the national economy and the defense of the country, played an important role in this. Minister of the Electronics Industry

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A. I. Shokin, speaking at the 26th CPSU Congress, cited the following characteristic fact: at the beginning of the five-year plan Americans wrote that in microelectronics we lagged behind them by 8-10 years, by the end of the 1970's they estimated this gap at 2-3 years and, finally, in early 1981, were forced to admit that the quality of our products is not lower than American products, while in a number of cases they are technically more perfect.[11]

In implementing the comprehensive programs of scientific and technical progress much space was assigned to the automation of production processes and the improvement of the processes of planning and day-to-day management. At the beginning of 1980 about 4,500 automated control systems, which had been set up almost exclusively on the basis of domestic equipment, were in operation in the USSR. More than half of the automated control systems put into operation during the 10th Five-Year Plan are systems for the automatic control of complicated technological processes in metallurgy, the chemical and pulp and paper industries, power engineering and other sectors of industry (in 1971-1975 they accounted for less than one-fourth of all the developed automated control systems).[12] The experience of their operation made it possible to draw the conclusion that they ensured, other things being equal, the increase of the output of products, increased their quality and promoted an increase of the proportion of mental labor in the activity of workers.

Industry to a greater and greater extent changed over to the fitting out of automated control systems, which were designed for territorial organizations, ministries and departments, with the latest equipment. By the end of the 10th Five-Year Plan they existed in practically all the union ministries and approximately one-third of the republic ministries. More and more complex systems operated in USSR Gosplan, the Central Statistical Administration, Gossnab, the State Committtee for Science and Technology and several other organizations. The introduction of automated systems in the management of industrial enterprises became a vital task, since they covered for the time being only 6 percent of the total number.[13]

In the middle of the 10th Five-Year Plan the proportion of automatic equipment exceeded 6 percent of the value of machines and equipment. Approximately one-tenth of the industrial personnel engaged directly in production were engaged in the maintenance of mechanized, flow and automatic lines. Automated and completely mechanized (as a whole or with respect to basic production) enterprises provided nearly one-fifth of the industrial output of the country.[14]

At the same time equipment of the first half of our century still predominated in industry and technology of the same era was used.[15] In all the sectors of industry a considerable portion of the workers were still engaged in the performance of monotonously repetitive manual operations, which at times were difficult and not harmless to their health. It was impossible to automate many of these operations by traditional means. Bearing in mind first of all such sectors of work, the 25th party congress set the task to develop rapidly the production of automatic equipment with small electronic systems of numerical program control and monitoring. For this it was decided, in particular, to organize the production of automatic manipulators with program control (robots), which make it possible to mechanize and automate difficult physical and monotonous operations.[16] The base for such a technical innovation was created by scientific achievements and by the progress in the development of industry. The electronics industry changed over to the series production of microelectronic computing devices. The production of industrial

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robots, which afforded truly revolutionary opportunities for the further automation of production, was begun.

The birth of industrial robots naturally coincided with the increasing demand for them: the sharp decrease of the proportion of manual labor had become an indispensable condition of economic growth.

The robots immediately demonstrated great technical and economic merits and ensured a significant increase of the production indicators. At the Kovrov Machinery Plant of Vladimirskaya Oblast, which produces sports motorcycles, 60 such new devices were used in 1978. In the robot-equipped sections labor productivity increased twofold, more than 100 people, who had previously been engaged in difficult physical labor, were released and a large economic impact was obtained.[17]

At the Moscow Khromatron Plant robots lift and move television picture tubes. At the Leningrad Kirovskiy zavod, Elektrosila, Optical-Mechanical and other associations they were installed at the stamping presses, machine tools and injecting molding machines. In Krasnoyarsk the specialists of the Sibtsvetmetavtomatika Scientific Production Association jointly with staff members of other enterprises and organizations elaborated the Sibirskiy robot Regional Intersectorial Program.[18] During the 10th Five-Year Plan machine building enterprises received 7,000 automatic manipulators, which made it possible to free 20,000 workers from difficult manual labor.[19]

The state plan of the output of manipulators, which was drawn up on the instructions of the party congress, was considerably exceeded, but the number of orders of industry greatly exceeded the number of robots which industry had.

Taking into account the great promise of the introduction of robots in the national economy and the need for the comprehensive solution of the questions of the further scientific elaboration of the problem and the organization of series production, the CPSU Central Committee and the USSR Council of Ministers, relying on the abundant experience which had been gained by that time, in 1980 adopted a decree which provides for the more rapid introduction of manipulators both in industry and in other sectors of the national economy.[20]

The problem of the automation of production, of the use of machine tools with numerical control and the use of computers, robots and other achievements of the scientific and technical revolution has acquired particular urgency in connection with the overall state of manpower resources, which had arisen by the end of the 10th Five-Year Plan.

The 1970's as a whole were characterized by a quite favorable demographic situation from the standpoint of the natural increase of the able-bodied population: its absolute average annual increase during 1971-1978 was greater than during 1961-1970.[21] The generation of young people born during the 1950's, when the level of the birth rate was the highest during the postwar years, reached able-bodied age. This situation was especially important under the conditions when a high degree of involvement of people of able-bodied age in social production had already been achieved, the reserves of the population previously not employed in social production were practically exhausted, the influx of rural inhabitants to cities had decreased considerably and young people became the main source of the reinforcement of industrial personnel.

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During the years of the 10th Five-Year Plan the number of workers and employees in the national economy of the country continued to increase, although slightly more slowly than during the preceding period.[22] The contingent of those employed in industry increased considerably, and the growth was even greater than in the early 1970's (during 1976-1979 alone the number of industrial personnel engaged directly in production increased by nearly 2.5 million, which is equal to its increase during the entire Ninth Five-Year Plan).

At the same time the clear tendency for the new reinforcements to decrease both in industry and in the entire national economy appeared by the end of the 10th Five-Year Plan. Whereas in 1976 the increase of the regular labor force in industry was 572,000, while decreasing subsequently, in 1979 it was already 300,000 less.[23] This was connected with the fact that beginning in the late 1970's the comparatively small generation of young people born in the 1960's began to reach working age. An even sharper decrease of the influx of young people will occur during this decade. According to the estimates of economists, the increase of the population of able-bodied age will decrease during the 1980's as compared with the 1970's from 18 to 3.8 percent.[24] The delayed demographic consequences of the war are having an effect. Under these conditions the economical, efficient use of manpower resources is becoming a more and more vital problem.

Foreseeing the decline of the growth of manpower resources, the CPSU Central Committee in good time set the task to create a machine building base for the considerable reduction of unproductive manual labor. A program of the rapid development of the production of the appropriate equipment, which was intended for 8 years, was adopted back in 1973.[25]

Much was accomplished during the years of the 10th Five-Year Plan. More than 1.5 million people were released from difficult manual labor. The initiative of the workers and engineering and technical personnel of Zaporozh'ye, who started the movement under the motto "Manual Labor Onto the Shoulders of Machines," became widespread. And still the proportion of manual labor in industry for the present remains high, especially in auxiliary operations, first of all materials-handling and loading and unloading operations. The supplanting of manual labor has proceeded more slowly and with greater difficulty than anticipated. The situation has also been aggravated by the fact than none of the materials-handling equipment plants of those planned to be started up by the end of the five-year plan have yet been put into operation.[26]

The dynamic development of the automotive and tractor industry was of great importance for the accomplishment of the tasks set by the party and the government. The automotive sector, as Minister V. N. Polyakov noted at the 26th party congress, experienced during the 1970's "a genuine rebirth."[27] During the years of the 10th Five-Year Plan the new unique KamAZ complex, which in 1980 produced its 200,000th truck, was put into operation; the Volga Motor Vehicle Plant achieved a level of production of 660,000 Zhigulis a year.

The material and technical base of agriculture was strengthened by means of the increase of the production of tractors and agricultural machinery. But the dynamic increase of the level of complete mechanization was checked by the lack of specialized machines for the mechanization of the labor-consuming processes of the tilling of many crops in farming, as well as by the output of some machines of a low technical level and quality.[28]

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A number of other factors also complicated the drive for technical progress and slowed the turn to the intensification of production. Nevertheless the development of machine building--this base sector of industry--proceeded more rapidly as compared with other sectors, having an ever increasing influence on the progress of the Soviet economy as a whole.

The fuel and power complex is another such base sector. In the middle of the 1970's, when the energy crisis broke out in the capitalist world, the achievements of the USSR in the production of petroleum, gas and coal and the generation of electric power demonstrated clearly the advantages of a planned economic system. As was emphasized at the 25th CPSU Congress, the Soviet Union is the only major industrial state in the world, which bases its economy on its own fuel and energy resources.[29] This situation was based on the enormous gains in the development of the fuel and power sectors, which were made by the beginning of the 10th Five-Year Plan. The USSR, which held first place in the world in the production of coal and petroleum and second place in the production of gas and has sufficient proven reserves of fuel, has demonstrated a steady dynamic growth of the national economy. In 1975 490.8 million tons of petroleum (including gas condensate), more than 289 billion m^3 of gas and 701.3 million tons of coal were extracted from the ground. Petroleum and gas accounted for two-thirds of all the resources of the fuel balance of the country (in 1960 their proportion was only a little more than one-third).[30]

The change in the structure of the fuel balance of the country in the direction of the increase of the proportion of petroleum and gas, as is known, provided great advantages to the national economy of the country.[31] They were connected with the enormous saving of assets, the reduction of the production cost of fuel and the development of the most advanced works. All this taken together made a significant contribution to the increase of the industrial potential of the country, the level, needs and means of which in the middle of the 1970's differed most significantly from the analogous indicators of the late 1950's, when coal predominated in the fuel balance.

The achieved gains, which were connected with the scale of production, the gained experience and the training of personnel, in the opinion of some planning workers and managers, who were directly concerned with the development of certain sectors of the fuel industry or others, it would seem, also predetermined the further increase of the production capacities in the directions which had so brilliantly shown their worth during the preceding years.

The CPSU Central Committee, having thoroughly analyzed the changed situation in the fuel industry and the new possibilities of progress of power engineering, which resulted from the scientific and technical revolution, drew a different conclusion, which was set down in the decisions of the 25th CPSU Congress--the need to increase in the future the power potential primarily by means of water power, nuclear fuel and inexpensive coals. As to petroleum and gas, the increase of their production should be aimed to a greater and greater extent at technological needs, in the form of raw materials for the chemical industry.[32] The huge amounts of petroleum and gas being extracted from the ground, given such an approach, should be used more efficiently and economically than before (suffice it to say that during the second half of the 1970's more than half of all the fuel being produced was consumed for the generation of thermal energy and electric power and 100 million tons of petroleum products, 30 million tons of coal and 100 billion m^3 of gas were consumed annually at electric power stations alone).[33]

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It is appropriate to note that the feasibility of such a policy of using petroleum as a raw material for the chemical industry was theoretically substantiated back in the times of D. I. Mendeleyev. But only under the conditions of the developed scientific and technical revolution did the shift to such a policy become practicable, were the technology and organization of production raised to the level necessary for this. It is a matter not only of the economic and technical substantiation of the use of petroleum as a raw material for further processing, but also of the fact that under present conditions a real opportunity has appeared for the gradual decrease of the proportion of petroleum in the fuel balance.

Precisely for this reason the 25th CPSU Congress emphasized that the qualitatively new large-scale problem of rearranging the fuel balance of the country had arisen for the national economy. It was of a long-term nature and required the corresponding efforts on the part of the state and society as a whole. The solution of such a problem, which is first of all directly connected with the extractive sectors of industry, presumed the use of a comprehensive approach, the increase of capital investments in science, machine building, transportation and the training of personnel. At the same time it was a policy of the development of new regions and the commitment to the economic turnover of the inexpensive coals and water resources of Western and Eastern Siberia, Kazakhstan and Central Asia. Characterizing the fuel and energy program, Chairman of the USSR Council of Ministers N. A. Tikhonov said that in 1981-1985 the increase of the generation of electric power will occur for the most part due to nuclear fuel, water power and the use of coals in the eastern regions of the country. It is planned to obtain at nuclear and hydroelectric power stations more than 70 percent of the increase of the generation of electric power, and in the European part of the country nearly the entire increase of its generation.[34]

This change began to be made directly during the second half of the 1970's. This is especially important to note as the expenditures which were made, just as the efforts of many large collectives, of course, had not yet been able to obtain visible reflection in the results of the 10th Five-Year Plan. At the December (1977) CPSU Central Committee Plenum it was frankly emphasized: "...Looking at things realistically, it will apparently have to be admitted that in the next 10 years petroleum and gas, first of all from Tyumen', will retain a decisive role in the provision of the country with fuel and power."[35]

The development of the productive forces of Western Siberia was recognized as a program of particular importance for the 10th Five-Year Plan. It is significant that in the early 1970's "The Main Indicators of the Development of the National Economy of Tyumenskaya Oblast" already existed as an appendix to the plan of the economic and social development of the country. This document contained assignments, which were addressed to each ministry, on the production volume of the most important types of output, on the amounts of capital investments, on the placement of housing into operation and so on.[36] During the 10th Five-Year Plan the Commission of the Presidium of the USSR Council of Ministers for the Western Siberian Petroleum and Gas Complex, as well as an interdepartmental commission attached to USSR Gosplan and located in Tyumen' were established for the coordination of the operation of different organizations working in the Ob' River region and the elimination of departmental isolation.[37] The questions connected with the development of the industry of the region were regularly examined at the plena and in the Politburo and Secretariat of the CPSU Central Committee.

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In 1980 the CPSU Central Committee and the USSR Council of Ministers took additional steps which were aimed at sharply increasing the scale of capital construction in the region of the Western Siberian Petroleum and Gas Complex. A conference specially devoted to the development of this region was held in the Central Committee after the outlining of the program of work. Such ministries as the USSR Ministry of Construction and the USSR Ministry of Construction of Heavy Industry Enterprises received important assignments on the building of projects. Additional duties on the construction of housing were assigned to construction trusts of Moscow, Leningrad, the Ukraine, Belorussia, Uzbekistan, Kazakhstan and the republics of the Soviet Baltic area.[38]

During 1976-1980 the Soviet state channeled enormous amounts of assets into the construction projects of Western Siberia, and precisely the 10th Five-Year Plan accounts for two-thirds of all the investments in this petroleum and gas complex, which have been made in the last 15 years.[39] Large skilled collectives, which have gained considerable work experience under the specific conditions of the north, have been formed here. In 1980 the Molodogvardeyets All-Union Komsomol Shock Detachment began its work in Tyumen'. In all more than 500,000 people worked on the prospecting and working of deposits and the building of cities, transportation and power lines. This figure exceeds by two- to threefold the number of those employed during the period of the greatest development of construction operations and operational development at such most important production investment complexes as the Volga Motor Vehicle Plant, the Western Siberian Metallurgical Combine and the Angara-Yenisey Power Industry Complex.[40]

The complete mechanization and automation of operations and the introduction of a new, economical technology became a firm foundation of success in the development of the natural resources of the Ob' River region. The directional cluster method of drilling was used extensively. Along the with construction of isolated single wells they began to drill them 18 at a time at a single site. At the end of the five-year plan more than two-thirds of all the fields were completely automated. Computer centers, which were hooked up with the unified automated control system, were set up in all the petroleum-producing regions. A considerable stock of equipment, machines and machinery was concentrated in Western Siberia. Many scientific and technical decisions, which were used at the petroleum and gas fields, were unique and were being used for the first time in this territorial production complex. The level of the equipment, automation and remote control was such that the Tyumen' workers achieved the highest labor productivity among the petroleum industry workers of the country.

In Western Siberia the 1 billionth ton of petroleum since the start of the working of the deposits was extracted in the middle of the five-year plan. This significant mark coincided with the start of a new stage in the development of this promising region.[41] The point is that during the preceding decade the famous deposits of Samotlor, Ust'-Balyk and several others, which had already reached the rated capacity and had achieved the peak of production, were the main point of the exertion of efforts. It was necessary to go farther north and to develop less productive deposits, where in order to obtain the same increase of production it was necessary to increase considerably the amount of drilling, to build new roads, to construct settlements and so on. The production of gas was developed in even more remote northern regions--in Urengoy.[42]

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Under the conditions of the advance into hard to reach uninhabited regions the work shift and expeditionary methods of the organization of work acquired great importance.[43] In the case of the work shift system the workers and their families lived in permanent population centers--base cities with a developed socioeconomic infrastructure, in the regions of the main production of the Ob' River region, such as Nizhnevartovsk, Nadym and others. Work shift settlements were set up directly at the fields, where the petroleum industry and gas industry workers were transported by airplanes and helicopters. The expeditionary system presumes the interregional use of manpower resources: the transportation by air transport of the necessary personnel from the old petroleum regions, where the opportunity arose to release a portion of the skilled personnel in connection with the depletion of a number of deposits (these are first of all Tataria, Bashkiria and other regions of the "Second Baku").

All this as a whole also determined the scale of the industrial transformation of the vast territory, which would have been impossible without the basic breakdown of the traditional means and methods of the development of new regions. It is generally acknowledged that in the world economy there are no analogues to the rate of development of the Western Siberian Region. The production of petroleum, which had just begun in the middle of the 1960's, reached 147 million tons in 1975 and more than doubled during the 10th Five-Year Plan. In 1980 312 million tons of petroleum (including gas condensate) were recovered here, during the years of the 10th Five-Year Plan alone the increase was 165 million tons. The production of gas in 5 years rose more than fourfold (from 34 to 156 billion m^3). The proportion of the region in the total production of gas in the country came to 52 percent and of gas--37.4 percent. In 1980 Western Siberia provided more than 10 percent of the world production of petroleum and gas.[44]

Other regions also made a significant contribution to the strengthening of the industrial potential of the country. On the average about 95 million tons of petroleum were produced annually in Tataria, Bashkiria persistently provided 40 million tons (and this is under the conditions of a difficult stage in the working of the deposits of these autonomous republics, just as of the entire "Second Baku" as a whole, which is connected with the decrease of the resources of local hydrocarbon raw materials).[45] The contribution to the all-union production of the new regions increased: the importance of the Mangyshlak deposits grew; the Komineft' Trust, having increased the production of petroleum during the five-year plan by more than 2.5-fold, moved in the absolute amounts of production from 16th to 5th place in the country.[46]

The production of gas increased significantly at the Timano-Pechorskiy Complex, which is being formed. In 1980 the Orenburg gas industry workers provided about 50 billion m^3. In all during the final year of the five-year plan 603 million tons of petroleum (including gas condensate) and 435 billion m^3 of gas were produced.

At the 26th congress USSR Minister of the Gas Industry S. A. Orudzhev summed up the development of the sector: the plan of the 10th Five-Year Plan was exceeded, labor productivity increased rapidly. The role of natural gas in the national economy of the country is great: nearly all the steel and pig iron, mineral fertilizers, and 60 percent of the cement being produced are made using it. Nearly 200 million people used gas in everyday life. The unified statewide gas supply system, the largest in the world in productivity and the power-worker ratio, was set up and operated successfully in the USSR.[47]

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It is especially important to note the achievements of the gas industry workers as the sector exceeded the plan assignments, while the petroleum industry workers fell a little short in their fulfillment, and the coal industry, operating during the last years of the five-year plan with a great strain, did not fulfill the assignments on the increase of the production of fuel and the growth of labor productivity (some objects under construction were not put into operation on time, many mines needed renovation).[48]

It would be incorrect, however, to evaluate unequivocally the overall process of the development of the coal industry during the second half of the 1970's. Important changes also occurred here. They were connected not only with the retooling of the old mining centers--the Donetsk, Kuznetsk, Pechora and Karaganda basins, which, as before, supplied the national economy with the bulk of the needed solid fuel. The Kuzbass alone provided one-fourth of the hard coal and one-third of the coking coal which are mined in the country. During the years of the 10th Five-Year Plan a decree of the CPSU Central Committee and the USSR Council of Ministers was adopted, which outlined the prospects of the further development of the Donbass.[49] The fact that during this period the proportion of the eastern regions in coal mining increased, was of particular importance. The coal industry of the country has changed its geography considerably, has enlarged the arsenal of technical decisions being used and has improved the technology of mining.[50]

Ekibastuz in Kazakhstan became a vivid sign of the new undertakings. The working of this deposit had been carried out on a comparatively small scale since the early 1950's. But with the appearance alone of powerful equipment for the open-cut mining of coal Ekibastuz joined the ranks of the most promising basins of the country. The construction of the Bogatyr' Open Pit, the largest in the world, at which the mining of coal is carried out by means of heavy-duty rotary excavators, which were developed at the Novyy Kramatorsk Machine Building Plant (each such excavator, the crew of which consists of 11 people, in productivity exceeds the largest modern mine), was completely finished here by 1980. In 1980 Ekibastuz produced 67 million tons of coal--threefold more than in 1970. The coal mined in the basin has become the least expensive in the country. An entire cascade of thermal electric power stations is being built at the base of the Ekibastuz deposits; in 1980 two power blocks of the first GRES with a capacity of 0.5 million kW each were already providing a current.[51]

The experience gained at Ekibastuz is of all the more importance as the tasks of the similar use of local coals, which were placed by the 25th CPSU Congress among the most important tasks, have been set down in the decisions of the 26th party congress. Among the especially promising tasks is the construction of the Kansk-Achinsk Fuel and Power Complex (KATEK). The second half of the 1970's was for the new lignite basin a kind of start: the pilot production section of the new open pit was assimilated, the first millions of tons of coal were shipped for experimental combustion.[52]

The 10th Five-Year Plan brought to life another coal center in the eastern part of the country--in Yakutia. When the construction of the railway line, which received the name "Little BAM," was completed ahead of time, it became possible to begin the open-cut mining of Yakutian high-grade coking coals in Neryungri, which are necessary for the metallurgical plants of Eastern Siberia and the Far East.

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For the country as a whole open-cut mining increased, making up more than one-third of the total amount of coal brought to the surface.[53]

An important role in the solution of the energy problem is being assigned to hydroelectric power stations. In 1979 the Nurekskaya GES, the largest in Central Asia, reached full capacity, 5 of the 10 units being built at the Sayano-Shushenskaya station provided a current. The Ust'-Ilimskaya GES on the Angara was put into permanent operation. In all hydroelectric power stations accounted for more than 14 percent of the generation of electric power in the country (in 1975--12.1 percent).[54]

During the second half of the 1970's nuclear power engineering made a mighty spurt. The extensive multilevel set of achievements, which became a reality only under the conditions of the scientific and technical revolution during the era of the transformation of science into a direct productive force, was the basis for it. The first atomic reactors were created as experimental reactors. During the years of the 10th Five-Year Plan the production of equipment for nuclear electric power stations was placed on an industrial flow. Many operating reactors bear the trademark of the Leningrad Izhorskiy Plant. The 25th CPSU Congress directed the attention of the collective of Izhorskiy workers to the organization of the series production of power blocks with a capacity of 1 million kW ("millionaires"). In fact this led to the renovation of the enterprise, the reorganization of all the shops and the placement of new production spaces into operation. The updating of production was carried out in close cooperation with the Ukrainian Institute of Electric Welding imeni Ye. O. Paton and other scientific institutions. As a result the outlined assignments were exceeded: the series production of "millionaires" was begun; in 5 years the plant made up 16 blocks of nuclear electric power stations.[55]

The development of various equipment for nuclear electric power stations also became a most important matter for many other enterprises. The Yuzhno-Ukrainskaya station, for example, was equipped with products of the Leningrad Elektrosila Association, the Kaluga and Khar'kov turbine plants.[56] For the purpose of placing nuclear power engineering on an industrial basis it was decided to increase the capital investments in this sector during the 10th Five-Year Plan by twofold as compared with the preceding five-year plan. The building of a large center of nuclear power machine building in Volgodonsk, which was designed for the series production of nuclear reactors, held a special place in the outlined program. In an unusually short time the capacities of 4 million kW of the reactors and equipment were put into operation ahead of time. In early 1981 the vessel of the first reactor was produced at Atommash. All this gave the 26th party congress grounds to draw the conclusion that a new sector of industry--nuclear machine building--had been created in the USSR.[57]

During the years of the 10th Five-Year Plan the achievements of Soviet science, the progress in the field of machine building and the experience of operating power blocks of various types made it possible to proceed to the extensive construction of nuclear electric power stations. The USSR started the five-year plan having a number of large nuclear electric power stations with a total capacity of more than 5 million kW.[58] During the second half of the 1970's the first station in the world to be built in a seismic area was put into operation in Armenia, two large blocks of the Kurskaya AES were started up, later there followed the firstlings of Ukrainian nuclear power engineering--the Chernobyl'skaya station near Kiev and the

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Rovenskaya station, new blocks of the Bilibinskaya station on the Chukotskiy Peninsula and of the Novovoronezhskaya AES. With the placement into operation of the fourth 1 million kW reactor the Leningrad station became one of the largest in the world. Construction was also performed in Lithuania, Smolensk and Kalinin. In 1979 12 nuclear electric power stations with a capacity of more than 25 million kW were in operation in the country.[59] Nuclear electric power stations were built almost exclusively in the European part of the USSR, in regions of considerable power consumption which at the same time are remote from deposits of coal, petroleum and gas. The placement of large reactors into operation led to a significant decrease of the production cost of the obtained power.[60]

The rate with which nuclear power stations and the main principles of their operation were improved is significant for the age of the scientific and technical revolution. During these years the Beloyarskaya AES in the Urals, at which in 1980 the largest fast reactor was started up (so-called uranium-graphite boiling water reactors were in operation at nearly all the stations, starting with the first experimental reactor in Obninsk), aroused the greatest interest. The idea of developing such a block arose long ago, but must time and effort were required for its realization. Science and industry had to develop fundamentally different equipment, which was capable of simultaneously withstanding enormous doses of radiation and a high temperature and of meeting the needs of the specially developed reactor cooling system. As a result a new scientific and technical solution was found, which makes it possible to use nuclear fuel more efficiently.[61] With the start-up of the new block of the Beloyarskaya AES fast reactors acquired industrial importance.

With respect to the growth rate of the capacities, nuclear power engineering was far superior to any sector of the national economy. In 1980 nuclear electric power stations generated 73 billion kWh of electric power (that is, 1.5-fold more than was generated throughout the country on the eve of the war or during the first postwar year). And although in the total electric power balance of the USSR nuclear power engineering for the present accounts for only 5.6 percent, the outlook of its development does not arouse doubts.[62]

The generation of electric power during the 10th Five-Year Plan was only one of the directions in the use of the peaceful atom. Nuclear plants helped to desalinize sea water on the Mangyshlak Peninsula and supplied heat to the settlements and mines on the Chukotskiy Peninsula. In Gor'kiy the construction of a nuclear heat supply station was in full swing. In 1977 the "Arktika" nuclear icebreaker was the first surface vessel in the world to reach the North Pole. This task was set not out of considerations of prestige; its content was exclusively an applied science one. Using the experience of the "Arktika," the following year the nuclear-powered vessel "Sibir'" led a carrying vessel by the shortest route through the high latitudes from Murmansk to the Bering Strait. Owing to nuclear icebreakers year-round navigation was ensured on the Murmansk-Dudinka line, which connects the mainland with the industrial region of Noril'sk. Another modern nuclear icebreaker, the "Rossiya," was laid down at the end of the five-year plan.[64] All these means of using nuclear power engineering were clear evidence that it had actively invaded all areas of power consumption.

As a whole in 1980 all the electric power stations generated 1,295,000,000,000 kWh of electric power. A new important step was taken in the formation of the Unified Power System of the country: the United Power System of Siberia was connected to

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it, as a result of which the USSR Unified Power System covered a territory with a population of more than 220 million.[65]

Summing up at the 26th CPSU Congress the development of power engineering, first of all nuclear power engineering, and noting the scale of the work in the area of the exploration for reserves of petroleum and gas and the organization of their recovery and transportation, President of the USSR Academy of Sciences A. P. Aleksandrov emphasized: "An energy crisis does not threaten us even in the distance future."[66]

The development of the base sectors of industry was the foundation, by relying on which the party continued the drive for the implementation of its economic strategy. The fundamental aims of this strategy were formulated back in 1971 at the 24th CPSU Congress. In their main tasks and main directions of economic activity the Ninth and 10th Five-Year Plans were as if a unified whole.[67] The question of the considerable increase of the material and cultural standard of living of the people and the implementation of such extensive social programs as history had not previously known, held a central place in each of them.

In 1975 the average monthly wage of workers and employees was about 146 rubles. The tendency for it to increase was also characteristic of the second half of the 1970's. The increase of the minimum wage to 70 rubles a month was completed everywhere. The rates and salaries of workers of the nonproductive sectors rose; as a result another 31 million workers and employees received a significant raise. In 1980 the average wage came to 168.5 rubles a month.[68] The personal savings of workers increased significantly: in 1980 the deposits of the population in savings banks exceeded 156 billion rubles. On a per capita basis the average size of a deposit was more than 500 rubles, that is, was approximately 10-fold more than in 1960 and 3-fold more as compared with 1970.[69]

Of course, given such an increase of the monetary income the task of improving the supply of the population with foodstuffs, as well as industrial consumer goods moved to the forefront in the increase of the standard of living of the workers. The importance of this problem also stemmed from another, no less important factor: a shortage of consumer items decreases the stimulating role of wages. Economic practice has clearly attested that without the timely payment to the budget of the money from the sale of goods to the population the state will experience a shortage of the financial resources which are necessary for the overall development of the economy.

The comprehensive solution of these difficult problems made it possible at the turning point between the 1960's and 1970's to plan and begin the fundamentally important turn of industry in the direction of the more and more rapid increase of the material well-being of the people. The amounts of capital investments in light and the food industries increased during the second half of the 1970's. They annually exceeded 5 billion rubles, that is, the annual investments exceeded by 1.5-fold the amount of all the prewar investments in the industrial production of consumer items.[70] Precisely this also predetermined the overall increase and the specific nature of the growth of all the sectors of industrial production, which produced goods for the population.

Important tasks in this direction were also set during the 10th Five-Year Plan for heavy industry. As in the past, it was aimed at the production of means of production, which are necessary for the stable growth and retooling of all the spheres of

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the national economy and for the strengthening of the defensive capability of the USSR. At the same time the conditions arose, which made it possible, first, to increase substantially the contribution of the enterprises of group A to the development of agriculture, light and the food industries, housing construction, trade and personal services and, second, to expand directly at these enterprises the output of consumer goods.

Back in the early 1970's 42 percent of the output produced by the defense industry went for civilian purposes.[71] Taking into account the high scientific and technical level of this sector and the overall potential of heavy industry, the party indicated categorically the feasibility and necessity of the attachment of the corresponding plants, institutes and organizations to daily participation in the work on increasing the standard of living of the people.

In short, the group of practical problems being solved by heavy industry increased, its position in the national economy grew even stronger. V. I. Lenin, as is known, back at the end of the 19th century, in appraising the function of heavy industry, emphasized that "in /the final analysis/ /in italics/ the production of means of production necessarily involves the production of consumer items, for means of production are produced not for the sake of the means of production themselves, but only on account of the fact that more and more means of production are required in the sectors of industry which produce consumer items."[72]

During the 10th Five-Year Plan more than 200 models of new types of machines, equipment and instruments for light and the food industries were developed on the average in a year at the enterprises of heavy industry. By the end of the 1970's one-fifth of the automatic lines of USSR industry were in operation in these sectors. Light and the food industries accounted for nearly half of the completely mechanized and automated enterprises of the country (in 1965 there were one-sixth as many such factories and plants).[73]

The turn toward the more complete meeting of the needs of the population appeared more and more distinctly in the scale and rate of development of the sectors producing mass demand items. The role of heavy industry in its accomplishment became especially significant as with its help modern agro-industrial production was also formed, mechanized poultry factories were built and services were equipped. At the enterprises of the specialized Ministry of Machine Building alone in 1980 more than 5,000 units of different technological equipment were produced for light and the food industries and household applicances (at the same time a wide assortment of consumer goods was produced here). And as a whole this industry produced during the last year of the five-year plan technological equipment and spare parts for it for light and the food industries worth 1.3 billion rubles.[74]

About 150 machine building plants and a large number of design bureaus and scientific research institutes were engaged in the development and production of equipment, machines and instruments for personal service enterprises. Technically the sector, which had 270,000 factories, shops and workshops and 2.6 million workers, gradually became industrial. During 1976-1979 the fixed capital of the republic ministries of personal services increased by 30 percent, reaching a value of 4.5 billion rubles.[75]

The 26th CPSU Congress, having rated positively the contribution of the workers of heavy industry to the production of consumer goods, emphasized the need for the

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thorough reorientation of the sectors of group A toward the production of machine tools, machines and equipment for light and the food industries and services. The lag of the scientific and design base, which is called upon to serve these sectors, was discussed with much anxiety in the Accountability Report of the Central Committee. The question of enlisting in this work the USSR Academy of Sciences, as well as other organizations, including defense organizations, which have large scientific forces, was raised.[76]

Changes in the structure of the means of production, which were being allocated to subdivisions I and II of social production, were also necessary for the increase of the proportion of consumer items in the total volume of industrial output. In practice during the years of the 10th Five-Year Plan the amount of means of production, which were intended for subdivision I itself, increased at a preferential rate, as a result of which the proportion of subdivision II in the total distribution of the means and objects of labor decreased (from 28.7 percent in 1975 to 28.3 percent in 1979).[77] Analyzing the data of this sort, M. M. Darbinyan, chief of a department of USSR Gosplan, noted: "This attests that in the next few years one should hardly expect any significant structural changes in the ratio of the output of the sectors of industrial groups A and B, if serious steps are not taken in this direction."[78]

An important role was also assigned to heavy industry in the organization of the output of consumer goods directly at its enterprises. Back during the years of industrialization heavy industry produced, for example, bicycles for the population. Starting in the 1950's this sector began to play a prominent role in the production of refrigerators, washing machines and tape recorders. Now the task of producing consumer goods was set for all the enterprises of group A (in Belorussia, for example, the following standard was established: every enterprise of heavy industry should have in its total production volume consumer goods in the amount of 2.5-3 percent).[79] During the 10th Five-Year Plan the enterprises of the ministries of instrument making and the chemical industry made an appreciable contribution to the solution of this problem. The aviation industry produced about 1,000 descriptions of different consumer goods worth nearly 1 billion rubles a year. Many metallurgical plants assimilated the production of kitchen utensils and so on.[80] The output of consumer items also increased (in absolute amounts) in both light and the food industries; but the rates of this increase were different, which predetermined the changes in the pattern of production of consumer items (see Table 1).

Table 1

Pattern of Production of Consumer Items
(percent of total)*

	1975	1979
Output of light industry	27.0	27.5
Output of the food industry	46.8	43.4
Output of the sectors of heavy industry	26.2	29.1
	100.0	100.0
Amount of cultural, personal and household goods in group B	13.6	15.0

*The table was compiled according to the data on the gross output in the current wholesale prices of enterprises (see: "Narodnoye khozyaystvo SSSR v 1979 g." /The USSR National Economy in 1979/, Moscow, 1980, p 138).

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If we take only nonfood consumer goods, here the proportion of heavy industry will increase to more than 50 percent. Its contribution to the output of cultural and personal goods especially increased: the enterprises of group A accounted for three-fourths of their total production.[81]

Such a turn, the expediency of which was indisputable, did not, however, come easy. Shortcomings in material and technical supply, economically unsound estimates, the poor organization of cooperative ties and the lack of the necessary skills interfered. Causes of a psychological nature also hindered the matter, many managers needed to overcome the previously formed attitude toward the production of consumer goods as a secondary assignment. Some workers of planning and economic organs continued to regard group B as a kind of balancer: by reducing the allocations for its development they attempted to overcome any imbalances in the plan.[82] In criticizing such managers, in 1976 L. I. Brezhnev noted that "far from everyone has yet been able to overcome completely the attitude toward the production of consumer goods as something secondary, incidental. Not everyone has yet understood that this is a matter of enormous political and economic importance, which is directly connected with the fulfillment of the program directives of the party."[83]

During the years of the 10th Five-Year Plan it was possible to a certain extent to overcome these sentiments. The contribution of a number of sectors of heavy and the defense industries to the increase of the production of many cultural and personal goods, including televisions, refrigerators and washing machines, was specially noted at the October (1980) CPSU Central Committee Plenum.[84]

In outlining the means of overcoming the various difficulties which are holding back the production of consumer goods, the CPSU Central Committee has repeatedly indicated that the great reserves of this sector are connected with the use of local resources and with the initiative of the republics, krays and oblasts and of the enterprises themselves.[85] Unfortunately, all the importance of such a statement of the question was not realized everywhere and immediately.

During the five-year plan irregularities in the trade in those goods, which it was possible to produce without particular difficulty in the most different regions of the country, appeared at times. The simplest medicines, soap, laundry powders, tooth brushes and tooth paste, needles, thread, children's diapers and others at times were in short supply. Deputies of the USSR Supreme Soviet and workers of the People's Control organized the examination of the letters and complaints of workers, which were connected with such inexcusable errors. It showed that it is possible to produce locally almost all goods of everyday demand, vigorously involving in this work local industry, consumer cooperatives, the soviets and their standing commissions.[86]

Many shortcomings were corrected in a short time, which once again showed what potential light and the food industries of the country have, how great the reserves of the efficient use of local raw materials, especially in remote regions, are.

Often the shortage of certain consumer goods or others resulted from shortcomings in the work of specific works of light industry and the sectors of the infrastructure, which are associated with them. Thus, during the years of the 10th Five-Year Plan irregularities were noted in the supply of the population with cotton fabrics and items made from cotton yarn (this occurred under the conditions of the constant

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increase of the harvest of raw cotton, which increased during 1976-1980 by nearly 25 percent).[87] The production of fabrics increased to a much smaller extent, during the five-year plan more than 1 billion m^2 fail to be produced. The point was that, as was noted at the December (1977) CPSU Central Committee Plenum, "there are several weak links in the chain, through which this most valuable raw material passes from the field to the counter of the store."[88] The cultivation of fine-fiber strains of cotton, which are most suitable for fabrics, declined, the quality of the raw material decreased due to unfavorable conditions of its storage and processing. Moreover, a gap formed between the raw material resources and the possibilities of the production of fabrics and items made from cotton yarn, which was caused first of all by the lag in the placement of capacities into operation in the cotton industry.[89]

Under these conditions, in connection with the rapid increase of the demand for consumer items, the timely completion of construction work and the placement of new construction projects into operation at full capacity acquired especially great importance. In early 1979 a conference, which examined the progress of the start-up program of the fourth year of the five-year plan, was held in the CPSU Central Committee.[90] During 1979-1980 the Perm' Synthetic Detergents Plant, the worsted and spinning factory in Nevinnomyssk of Stavropol'skiy Kray and the spinning and weaving factory in Andizhan, the carpet combine in Ungeny, the knitwear factories in Ulan-Ude and Artem, the flax-processing plants in Kalininskaya and Kostromskaya Oblasts, the Dobrinskiy Sugar Refinery in Lipetskaya Oblast, the meat combines near Volgograd and Sverdlovsk and in Cheboksary, the Kuybyshev, Belgorod, Lutsk, Feodosiya and Tbilisi dairy plants and combines were put into operation. Thus, as in previous years, enterprises for the production of consumer goods were built in the most different regions of the country. The specific nature of the sector is such that it traditionally should be located everywhere, near the main regions of consumption.

The construction of enterprises which produce consumer items and the changeover of industry to the mass production of new goods actively promoted the formation of consumer demand. When the construction of a household air conditioner plant was begun in Baku during the Ninth Five-Year Plan, many people simply did not know about the existence of such equipment. Meanwhile the quality of the future product at that time had already become one of the main concerns of the party and economic executives of the republic and the Ministry of the Electrical Equipment Industry. With allowance made for the experience of the Volga Motor Vehicle Plant they began in advance to train workers and specialists. Probation work was done at enterprises in Moscow and Leningrad, Gor'kiy and Tol'yatti, Vilnius and other cities, which were related in specialization. Moreover, 135 workers, engineers and technicians familiarized themselves with the work of Japanese enterprises.

In 1976 56,000 artificial climate appliances had already come off the main conveyor. The Baku workers developed in the large cities of the country a network of firm warranty repair shops. During the 10th Five-Year Plan the production of air conditioners, which were commended with the Seal of Quality, came to more than 1 million. The plant became the largest enterprise of the kind in Europe and Asia.[91]

Much attention was devoted during those years to the achievement of a balance of supply and demand, the gradual rationalization of consumption and the meeting of the increased needs of the population. The increase of the production of passenger cars, spare parts for them and so forth should be noted first of all.[92] This was

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connected with the further expansion of the Volga Motor Vehicle Plant, the increase of the output of passenger cars in Moscow, Gor'kiy, Izhevsk and Zaporozh'ye and the appearance of special models designed for rural areas.

The production of goods which had become traditional also increased greatly. Whereas in 1970 only half of all the families in the country had televisions, by the end of the 10th Five-Year Plan more than 80 percent of the families watched television broadcasts. At that time the supply with refrigerators was the same (in the early 1970's only one family in three had them). There were many more washing machines and radios. Approximately 1 family in 12 had a passenger car, 1 in 10 had a motorcycle and a motor scooter and 1 in 2 had a bicycle. It is noteworthy that the saturation with these goods increased especially rapidly in the countryside. As a result the level of supply of urban and rural inhabitants with cultural and personal goods grew appreciably closer, while the countryside surpassed the city in the provision of families with sewing machines, bicycles and motorcycles.[93]

If we look at how Soviet families broke down their budget, it would become clear that the proportion of expenditures on food decreased, while the proportion of the expenditures on the purchase of fabrics, clothing, footwear, furniture and cultural and personal items increased. The period when the inhabitants of the city and the countryside were purchasing industrial goods for the first time has already passed. To use the expression of sociologists, the time of "secondary," "tertiary" demand and so on had arrived.

Thus, step by step industry completed the turn to the more complete meeting of the needs of the workers. True, it was not possible to implement everything that was planned. One of the main difficulties was rooted in the still inadequate supply of agriculture with modern equipment and highly skilled personnel. The situation was aggravated by the severe consequences of the years of poor crops, from which several sections of the food and light industries first of all suffered. Nevertheless the 10th Five-Year Plan maintained the continuity (with respect to the Ninth Five-Year Plan) in the overall increase of mass demand goods; the output of products of group B increased by 40 billion rubles.[94]

In concluding the examination of the subjects which show the main directions of the industrial development of the country during the years of the 10th Five-Year Plan, let us note some characteristic traits of this process. At the end of the 10th Five-Year Plan the growth rates of group A and group B drew closer together: in 1979 both subdivisions provided the same increase. In all during 1976-1980 the production of means of production in industry increased by 26 percent, the production of consumer items increased by 21 percent.[95]

Practical experience showed the inadequacy of these growth rates, and it was not only a matter of the fact that they did not conform to the planned indicators. The ratio of groups A and B in industry itself did not meet the needs of the development of the national economy and the increased demand of the population for high quality mass demand goods. This question was covered extensively both during the precongress discussion of the Main Directions of USSR Economic and Social Development and directly in the speeches of the delegates of the 26th CPSU Congress. It also found a direct reflection in the documents of the congress. "...In the draft of the Main Directions for the next five-year plan," L. I. Brezhnev noted at the congress, "some acceleration of the rate of development of group B has been incorporated--it will slightly exceed the growth rate of group A. This is good. The

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task is to develop the truly modern production of consumer goods and services for the population, which meets the needs of the people."[96]

The question of the ratio of the growth rates of industrial fixed capital, labor productivity and the volume of output being produced is also of great importance with respect to the problem in question. The statistical materials, which have been brought together, reveal the following picture (see Table 2).

Table 2

Growth Rates of Industrial Fixed Capital, Labor Productivity and the Volume of Industrial Output by Sectors for the Period of 1975-1979*

	Industrial fixed capital	Labor productivity	Production volume
Industry as a whole	134	114	120
Electric power engineering	126	111	121
Fuel industry	135	107	114
Ferrous metallurgy	126	108	110
Chemical and petrochemical industry	142	118	125
Machine building and metalworking	143	129	140
Timber, wood processing and pulp and paper industry	128	107	106
Construction materials industry	129	105	109
Light industry	128	112	114
Food industry	124	104	107

*1975 = 100 percent. Calculated according to "Narodnoye khozyaystvo SSSR v 1979 g.," pp 141, 148, 154.

First of all the achievements of the works, which are grouped with machine building, metalworking, the chemical and petrochemical industry, which with respect to all the indicators led not only the other leading sectors, but also industry as a whole, attract attention. And this completely reflected their leading role in the assurance of scientific and technical progress, which, in turn, was also connected with the determination of the priorities in the policy of capital investments. Considerable assets were allocated for practically all sectors, but the return was not in all cases proportionate to the investments. The data on the growth rate of produced output and its correlation with the increase of fixed capital are evidence of this. In addition to the named sectors electric power engineering was in the most favorable position. As to the fuel base, here, as we know, the great expenditures were connected with the advance to the east and with the development of hard to reach regions. The nonfulfillment of the plan by the coal industry workers also affected the overall indicators.

The comparison of the first and third columns of the table confirms the thesis of the continuing decline of the output-capital ratio, which our economists have already repeatedly indicated.[97] Suffice it to say that the increase of fixed capital in industry by nearly 1.5-fold exceeded the increase of the total volume of output. In light industry this gap was twofold, in the food industry--more than threefold, in the timber, wood processing and pulp and paper industry--more than fourfold. The situation in ferrous metallurgy was also very difficult.

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The data on labor productivity once again show that with the exception of the leading sectors (machine builders and chemical industry workers) all the other detachments were greatly inferior to the all-union achievements with respect to these indicators. Here we once again have to note the considerable discrepancies between the expenditures on the increase of the technical equipment of personnel and the return which took the form of the increase of labor productivity. On the scale of all industry labor productivity increased during the five-year plan by 17 percent instead of the planned 30-34 percent. Three-fourths of the increase of the output of industry (90 percent was planned) was obtained by means of the increase of labor productivity.[98]

In summing up the 10th Five-Year Plan as a whole, while giving full credit to the truly historic accomplishments of the Soviet people, the 26th CPSU Congress indicated the identified difficulties, shortcomings, unsolved problems, bottlenecks and disproportions. "The reasons here are diverse," L. I. Brezhnev said in the Accountability Report of the Central Committee to the congress. "Among them are the effect of objective factors which are independent of our will, the omissions in planning and management, the inadequate demandingness of a number of party organs and economic managers, violations of discipline, displays of poor management. But, perhaps, the most important cause consists in the fact that the force of inertia, the traditions and habits, which formed during the period when not so much the qualitative as the quantitative aspect of the matter came to the forefront, have not yet been completely overcome."[99]

When specifying the ways and means of eliminating the identified obstacles and outlining the plans for the 1980's, the party attached decisive importance to the experience which had already been gained and which had brought the country to the turn of the 11th Five-Year Plan. The analysis of the past planning and reporting period enabled the 26th CPSU Congress to express a high opinion of the contribution of the workers of industry to the development of the economy and the increase of the well-being of the people. The great absolute increases of production, the increase of the output of modern equipment and the achievements of the fuel and power complex were especially commended. More than 1,200 large industrial enterprises had been put into operation. Industry developed more rapidly than all the sectors of the national economy. The output of products as compared with the Ninth Five-Year Plan had increased by 24 percent.[100]

The achieved gains for their most part predetermined the possibilities of the further stable development of USSR industry and the enhancement of its role in the development of the Soviet economy. During the years of the 11th Five-Year Plan (just as during the past period) industry with respect to the growth rate will lead the other sectors of the national economy; moreover, the rate of increase of its output, as well as labor productivity should be greater than during 1976-1980; it is planned to obtain 90 percent of the increase by means of the increase of labor productivity. For the first time in the history of the Soviet five-year plans it was decided to increase the national income more rapidly than the capital investments. All this taken together attests that the policy of increasing production efficiency not only is being continued, but is also being intensified substantially. The potential built up in the sphere of industrial production during the years of the 10th Five-Year Plan will make it possible during the 1980's to take a new step in the creation of the material and technical base of communism.

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FOOTNOTES

1. "Materialy XXVI s"yezda KPSS" /Materials of the 26th CPSU Congress/, Moscow, 1981, p 139.

2. Calculated according to "Narodnoye khozyaystvo SSSR v 1978 g." /The USSR National Economy in 1978/, Moscow, 1979, p 386; "Narodnoye khozyaystvo SSSR v 1979 g." /The USSR National Economy in 1979/, Moscow, 1980, pp 312, 386, 387.

3. "Materialy XXV s"yezda KPSS" /Materials of the 25th CPSU Congress/, Moscow, 1976, pp 126-127.

4. D. Zhimerin, "Comprehensive Programs of Scientific and Technical Progress," POLITICHESKOYE SAMOOBRAZOVANIYE, No 2, 1978, p 42.

5. V. K. Novikov, "For a New Upsurge of Domestic Machine Building," KOMMUNIST, No 3, 1979, p 23.

6. "Spravochnik partiynogo rabotnika" /Handbook of the Party Worker/, issue 19, Moscow, 1979, pp 232-236.

7. PRAVDA, 26 March 1980.

8. "Narodnoye khozyaystvo SSSR v 1979 g.," pp 112-114; PRAVDA, 24 January 1981.

9. D. Zhimerin, Op. cit., p 44.

10. PRAVDA, 8 February 1981.

11. PRAVDA, 27 February 1981.

12. "Narodnoye khozyaystvo SSSR v 1979 g.," p 114.

13. PRAVDA, 12 May 1980.

14. VOPROSY EKONOMIKI, No 2, 1979, pp 36, 93.

15. S. A. Kheynman, "Nauchno-tekhnicheskaya revolyutsiya segodnya i zavtra" /The Scientific and Technical Revolution Today and Tomorrow/, Moscow, 1977, p 302.

16. "Materialy XXV s"yezda KPSS," p 189.

17. Ye. Popov, "Robots Are Assistants in Human Affairs," KOMMUNIST, No 15, 1979, p 81.

18. "Stroki, rozhdennyye poiskom. Ekonomicheskiye obozreniya 'Pravdy'" /Lines Given Birth to by Research. Economic Reviews of PRAVDA/, Moscow, 1980, pp 83-84.

19. EKONOMICHESKAYA GAZETA, No 11, 1981, p 24.

20. PRAVDA, 9 August 1980.

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21. V. Kirichenko, "The Proportionality of Economic Growth and Efficiency," KOMMUNIST, No 18, 1980, pp 33-34.

22. See V. A. Yezhov, A. Z. Bakser, I. P. Trufanov, "Rabochiy klass SSSR v gody devyatoy pyatiletki" /The USSR Working Class During the Years of the Ninth Five-Year Plan/, Leningrad, 1978, pp 54-56.

23. Calculated according to "Narodnoye khozyaystvo SSSR v 1979 g.," pp 147, 387.

24. "Trudovyye resursy SSSR" /USSR Manpower Resources/, Moscow, 1979, p 12.

25. See L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politike KPSS na sovremennom etape" /On the Main Questions of CPSU Economic Policy at the Present Stage/, Vol 2, Moscow, 1979, p 536.

26. "Stroki, rozhdennyye poiskom. Ekonomicheskiye obozreniya 'Pravdy'," pp 85-87.

27. PRAVDA, 28 February 1981.

28. "KPSS v rezolyutsiyakh i resheniyakh s"yezdov, konferentsiy i Plenumov TsK" /The CPSU in Resolutions and Decisions of Congresses, Conferences and Plena of the Central Committee/, Vol 13, Moscow, 1981, p 162; I. M. Volkov, "USSR Agriculture During the Years of the 10th Five-Year Plan," ISTORIYA SSSR, No 4, 1981.

29. "Materialy XXV s"yezda KPSS," p 140.

30. "Narodnoye khozyaystvo SSSR v 1979 g.," pp 170-171.

31. "Istoriya sotsialisticheskoy ekonomiki SSSR" /The History of the Socialist Economy of the USSR/, Vol 7, Moscow, 1980, pp 259-261.

32. "Materialy XXV s"yezda KPSS," pp 140, 176-177; "Zasedaniya Verkhovnogo Soveta SSSR devyatogo sozyva. Pyataya sessiya. Stenograficheskiy otchet" /The Meetings of the USSR Supreme Soviet of the Ninth Convocation. Fifth Session. Verbatim Report/, Moscow, 1976, pp 18-19.

33. "Zasedaniya Verkhovnogo Soveta SSSR devyatogo sozyva. Desyataya sessiya. Stenograficheskiy otchet" /The Meetings of the USSR Supreme Soviet of the Ninth Convocation. Tenth Session. Verbatim Report/, Moscow, 1978, p 69.

34. "Materialy XXVI s"yezda KPSS," p 114.

35. L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politike KPSS na sovremennom etape. Rechi i doklady," Vol 2, p 452.

36. "The Main Problems of the Comprehensive Development of Western Siberia," VOPROSY FILOSOFII, No 1, 1979, p 31.

37. "Materialy XXVI s"yezda KPSS," pp 50, 125; PRAVDA, 27 February 1981.

38. PRAVDA, 15 April 1980, 27 May 1980.

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40. A. Khaytun, "Socioeconomic Problems of the Development of the Petroleum and Gas Regions of the Country," PLANOVOYE KHOZYAYSTVO, No 9, 1979, p 89; PRAVDA, 27 February 1981.

41. L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politike KPSS na sovremennom etape," Vol 2, p 452.

42. PRAVDA, 5 June 1978.

43. PLANOVOYE KHOZYAYSTVO, No 9, 1977, pp 90-91.

44. PRAVDA, 27 April 1980, 24 and 27 February 1981.

45. PRAVDA, 27 February 1981; EKONOMICHESKAYA GAZETA, No 28, 1980, p 2.

46. EKONOMICHESKAYA GAZETA, No 28, 1980, p 3; PRAVDA, 26 February 1981.

47. PRAVDA, 2 March 1981.

48. EKONOMICHESKAYA GAZETA, No 15, 1981, p 2; PRAVDA, 27 February 1981.

49. "KPSS v rezolyutsiyakh i resheniyakh s"yezdov, konferentsiy i Plenumov TsK," Vol 12, Moscow, 1978, pp 75-78.

50. EKONOMICHESKAYA GAZETA, No 28, 1980, p 3; PRAVDA, 1 September 1980, 26 February 1981.

51. B. Isayev, "The Ekibastuz Fuel and Power Complex," PARTIYNAYA ZHIZN', No 2, 1981, pp 35-39.

52. PRAVDA, 22 March 1979.

53. "Narodnoye khozyaystvo SSSR v 1979 g.," p 171.

54. EKONOMICHESKAYA GAZETA, No 12, 1981, p 2.

55. EKONOMICHESKAYA GAZETA, No 33, 1980, p 1.

56. PRAVDA, 25 May 1980; IZVESTIYA, 18 June 1980.

57. "Materialy XXVI s"yezda KPSS," p 33.

58. A. P. Aleksandrov, "Atomnaya energetika i nauchno-tekhnicheskiy progress" /Atomic Power Engineering and Scientific and Technical Progress/, Moscow, 1978, p 195.

59. Yu. V. Sivintsev, "I. V. Kurchatov i yadernaya energetika" /I. V. Kurchatov and Nuclear Power Engineering/, Moscow, 1980, p 73.

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60. With an average production cost of electric power in the USSR of 0.8 kopeck per kWh the Novovoronezhskaya AES generates it at a cost of 0.6 kopeck; ibid.

61. "Zasedaniya Verkhovnogo Soveta SSSR devyatogo sozyva. Desyataya sessiya," p 21; PRAVDA, 13 March 1980, 9 April 1980.

62. EKONOMICHESKAYA GAZETA, No 12, 1981, pp 1-2

63. PRAVDA, 14 August 1980.

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65. "Zasedaniya Verkhovnogo Soveta SSSR devyatogo sozyva. Desyataya sessiya," p 69; PRAVDA, 28 February 1981.

66. PRAVDA, 26 February 1981.

67. See "Materialy XXV s"yezda KPSS," p 39.

68. "Narodnoye khozyaystvo SSSR v 1979 g.," p 394; PRAVDA, 24 January 1981.

69. "Narodnoye khozyaystvo SSSR v 1979 g.," p 435; PRAVDA, 24 January 1981.

70. Calculated according to "Narodnoye khozyaystvo SSSR v 1979 g.," pp 366-367.

71. "Materialy XXIV s"yezda KPSS" /Materials of the 24th CPSU Congress/, Moscow, 1971, p 46.

72. V. I. Lenin, "Poln. sobr. soch." /Complete Works/, Vol 4, pp 160-161.

73. "Narodnoye khozyaystvo SSSR v 1979 g.," pp 112-113, 115, 116.

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76. "Materialy XXVI s"yezda KPSS," pp 43-44.

77. "Narodnoye khozyaystvo SSSR v 1979 g.," p 137.

78. VOPROSY EKONOMIKI, No 2, 1981, p 53.

79. IZVESTIYA, 18 July 1979.

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81. PRAVDA, 7 February 1979, 24 February 1981.

82. L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politike KPSS na sovremennom etape. Rechi i doklady," Vol 2, p 536.

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83. Ibid., p 323.

84. KOMMUNIST, No 16, 1980, p 7.

85. "KPSS v rezolyutsiyakh...," Vol 12, Moscow, 1978, p 386.

86. KOMMUNIST, No 17, 1979, p 15.

87. "Narodnoye khozyaystvo SSSR v 1975 g." /The USSR National Economy in 1975/, Moscow, 1976, p 367; PRAVDA, 24 January 1981.

88. L. I. Brezhnev, "Ob osnovnykh voprosakh ekonomicheskoy politike KPSS na sovremennom etape," Vol 2, p 450.

89. M. M. Darbinyan, "Means of Meeting the Needs of the Population," VOPROSY EKONOMIKI, No 2, 1981, p 50.

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93. "Narodnoye khozyaystvo SSSR v 1979 g.," pp 433-434.

94. KOMMUNIST, No 16, 1980, p 7.

95. "Materialy XXVI s"yezda KPSS," p 103.

96. Ibid., p 49.

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98. "Materialy XXV s"yezda KPSS," pp 167, 175; "Materialy XXVI s"yezda KPSS," pp 108, 133.

99. "Materialy XXV s"yezda KPSS," pp 36-37.

100. "Materialy XXVI s"yezda KPSS," pp 100, 103.

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